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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,973	04/14/2006	Tesuya Shirade	2011-1640	7031

513 7590 01/04/2012

WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
WATTS, JENNA A	

ART UNIT	PAPER NUMBER
1781	

NOTIFICATION DATE	DELIVERY MODE
01/04/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com
eoa@wenderoth.com

Office Action Summary	Application No.	Applicant(s)	
	10/575,973	SHIRADE, TESUYA	
	Examiner	Art Unit	
	JENNA A. WATTS	1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *22-32* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *22-32* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *14 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 22-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding new Claim 22 and the claimed limitations of "giving stimulation to a part of the ozone gas-containing microbubbles thereby rupturing the coating shells" and "repeating said operation of giving stimulation to a part of the ozone gas-containing microbubbles" are unclear because it is unclear how such stimulation could be restricted to only parts of the microbubbles and how this would even be ascertained. Similarly, in new Claim 32, for the same reason it is unclear how the rupturing of the coating shells can be restricted to a portion of the microbubbles in the raw materials and after processing and packaging, and how such a step would be ascertained. In neither case does Applicant's specification provide any guidance on this issue, and therefore, the metes and bounds of these limitations for search and examination purposes are unclear.

4. Additionally regarding new Claim 22, line 11 of the claim recites "while the ozone gas-containing microbubbles are in the fish-paste product, thereby sterilizing the fish paste product by the formation of active oxygen and free-radical species" and such a

limitation is unclear because it is submitted that at this point in the method, there are only raw materials of the fish paste product not the fish paste product itself, where the fish paste product is subsequently processed and packaged. Therefore, as seen in new Claim 32, it is believed that the first sterilizing step is performed on the raw materials of the fish paste product, and this is also in light of Applicant's PG Publication, Paragraphs 25-27 and 30-32. Clarification is requested by Applicant on the above points.

5. Claims 26-31 recite the limitation "the stimulation" in line 1 of the claims. There is insufficient antecedent basis for this limitation in the claim. Specifically, Claim 22 recites two stimulation steps and Applicant discloses that all of the claimed types of stimulation are suitable for use on the raw materials of the fish paste product but only some of the types of stimulation are suitable for use on the fish paste after processing and packaging (see PG Publication, Paragraphs 23, 32 and 33). Therefore it is unclear to which stimulation, the first or the repeated stimulation, or both, Applicant refers in the above mentioned claims.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 22-27 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and Swart et al. (U.S.P.A. 2002/0192340), as evidenced by Merriam- Webster's Online Dictionary, all previously made of record.

9. Regarding Claims 22-26 and 30, Hoachi teaches a method for sterilizing and producing a fish-paste product (see of JP 56-121462) by agitating and processing fish materials in the presence of ozone air (Page 1, lower left column of Foreign Publication JP 56-121462). Thus, it is understood that the ozone and raw materials of the fish-paste product are in contact with each other during the processing of the fish paste. Hoachi teaches that the ozone gas is fed through an ozonizer into a hermetically sealed agitator that contains the raw materials of a fish-paste product, the agitator containing a blade that agitates and grinds the raw materials into a fish-paste product in the presence of the ozone (see Page 1, Claim 1, Page 3, upper left column and Page 3, Figure 1 of Foreign Publication JP 56-121462), thus the ozone gas can be seen to be stimulated by the movement of the blade and raw materials of the fish paste product.

10. Hoachi teaches that the stimulation comprises blending, mincing and processing of the fish meat into a paste food in the presence of ozone inside the agitator with the blade (see Hoachi, English abstract of JP 56-121462). Thus, the raw materials would be rubbing together due to the agitating action of the blade inside the agitator containing the ozone gas. According to Merriam- Webster's Online Dictionary, pestling can be defined as to beat, pound or pulverize and is deemed synonymous with the actions taught by Hoachi because both result in the production of a fish paste product. Thus, Hoachi is deemed to meet the claim limitations of where the stimulation comprises rubbing together raw materials of the fish-paste product while pestling the raw materials after the step of adding the ozone gas since the grinding/pestling of the fish paste is done in the presence of the ozone.

11. Hoachi may not specifically refer to the materials of the fish-paste product as raw, but teaches the processing and production of boiled fish paste, fried fish balls, etc.(see English Abstract of JP 56-121462) that are all cooked products, thus it is understood that prior to processing the materials of the fish-paste product are raw. The raw materials or tissues are deemed to include protein and lipid contained in the fish-paste products because Hoachi teaches that the fish paste can be made up of fillets or other fish meat (see Hoachi, Page 1, lower right column of Foreign Publication JP 56-121462), which would be reasonably expected to contain both protein and lipids. Furthermore, Applicant discloses that tissues in raw materials of the fish-paste product refer mainly to protein and lipid (See instant application, Page 6, lines 1-2).

12. Hoachi does not teach the addition of ozone gas-containing microbubbles having a diameter of 50 microns or less generated in water to the raw materials of the fish paste, and further does not teach the coating of interfaces of the bubbles with tissues contained in raw materials of the fish-paste product, thereby creating coating shells made of the tissues to maintain the longevity of the ozone gas-containing microbubbles, the shells covering the ozone gas-containing microbubbles, and giving stimulation to a part of the ozone gas-containing microbubbles thereby rupturing coating shells of the ozone gas-containing microbubbles while the ozone gas-containing microbubbles are in the fish paste product, thereby sterilizing the fish paste product by the formation of active oxygen and free-radical species.

13. Garlick teaches ozone as a broad-spectrum sterilizing agent and teaches a method of providing a sterilizing fog characterized by a particular droplet size range and its use in sterilizing food having irregular surfaces such as muscle tissue (Column 1, lines 8-10, 32-40 and Column 3, lines 60-65). Garlick teaches that in a gaseous form, most sterilizing agents are rather hazardous and difficult to control exposure time and ozone decays in a gaseous form far too quickly to be useful in food processing. Garlick teaches that water is the preferred media for transporting ozone and other sterilizing agents to a contaminated site for oxidative anti-microbial activity (Column 1, lines 45-50). Garlick further teaches foods can be immersed in a liquid bath but can also be sprayed onto a food and teaches that spray systems do not provide a uniform coverage of the product and can utilize large amount of water, accordingly, spray systems employing larger droplets of water containing ozone, have not been effective because of

a droplet size that is too large to effect surface penetration of irregularities (Column 1, lines 53-56 and 60-65).

14. Garlick teaches that a further issue is that spray systems having large droplets are unable to penetrate micro-cavities on irregular surfaces of food products, such as meats, and water surface tension prevents the large drops and liquid bath from penetrating these regions and the bacteria present in micro-cavities remains undisturbed (Column 2, lines 5-10). Garlick solves the above prior art problems by using an ozone fog/spray/mist, wherein the fog is characterized by droplets having an average diameter of from about 0.0005 mm to about 0.05 mm, and where preferably the sterilant fog is an ozone fog (Column 2, lines 20-25 and 55-58), where 0.05 mm equals 50 micrometers. Therefore, since Garlick teaches that the average diameter of the particles is at the greatest 50 micrometers or less than 50 micrometers, it would be reasonably expected that at least a portion of the particles have a diameter of 50 micrometers or less, which is the claimed diameter of the microbubbles.

15. Therefore, Garlick's teaching of ozonated water, where the ozone dissolves in the water, used to create an ozone fog having the disclosed diameter of the ozone particles is deemed to read on adding water containing the ozone gas-containing microbubbles. Since Garlick teaches that ozone gas is injected into a water stream and teaches that the resulting fog comprises droplet sizes having an average diameter of at the most 50 micrometers or less, it would be expected that the droplets comprising the dissolved ozone would have a diameter of 50 micrometers, and therefore, both the ozone gas bubbles and the water forming the fog would have the same diameter.

Furthermore, Garlick's teaching of a fog comprising the claimed droplet size of ozone is deemed to read on spraying a mist of the water containing the ozone gas-containing microbubbles. Garlick teaches that high frequency high power sound waves cause the undissolved gas bubbles to rupture (Column 4, lines 25-28) and teaches that the inventive fog is generated in a vapor cell which comprises an orifice to allow release of the inventive ozone fog where the orifice opens up to a contact chamber where the product to be disinfected or sterilized is located (Column 4, lines 33-35 and 45-55 and Column 5, lines 10-11).

16. Garlick teaches a method of providing a more useful ozone fog that is able to access irregular surfaces of food products, due to its very small droplet size coupled with a high ozone concentration in water (Column 3, lines 60-64). Garlick teaches a slowed fall rate of the smaller droplet sized particles, allowing a longer contact time with the surface and can more easily fill micro-cavities of the irregular surface of the foods (Column 4, lines 13-15). Garlick teaches that the highly ozonated water is used to either feed an immersion tank for direct contact with food products or to create the inventive fog in a vapor cell (Column 4, lines 33-35).

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing fish paste, as taught by Hoashi, to have included adding water containing ozone gas-containing microbubbles having the disclosed diameter and in the form of a mist or fog, because Garlick teaches that foodstuffs having irregular surfaces, such as muscle tissue, can be more effectively sterilized using water containing microbubbles of ozone than gas-containing ozone,

because the ozone microbubbles in water are better able to penetrate to the micro-cavities of the food, thereby sterilizing any bacteria present, as compared to larger ozone bubbles or ozone in gas form. One of ordinary skill in the art would have been motivated to add water containing ozone gas-containing microbubbles and in the form of a mist or fog to the sterilizing method of Hoashi in order to quickly and effectively insure the sterilization of a food, such as fish paste, so that it is safe for the consuming public.

18. Therefore, since Hoashi in view of Garlick teach adding the ozone gas containing microbubbles having the disclosed diameter in the form of a mist or fog to the raw materials of the fish paste product and further teaches that the smaller ozone droplet size enables the more enhanced penetration of micro-cavities present in the food product, one of ordinary skill in the art would have reasonably expected that the ozone gas-containing microbubbles of Hoashi in view of Garlick would be penetrating the solid foodstuff, and therefore coating interfaces of the ozone-gas containing microbubbles with tissues contained in raw materials of the fish paste product thereby creating coating shells composed of the tissues to maintain the longevity of the ozone gas-containing microbubbles, in view of the fact that Applicant discloses that it is the diameter of the microbubbles that allow the coating shells to form in the raw materials of the fish paste product, and wherein the stimulation taught by Hoashi would thereby rupture the coating and result in the claimed method steps, because since Hoashi in view of Garlick teaches the claimed ozone composition and its method of delivery as well as the pestling stimulation step, such an ozone composition will react or co-act in the same

manner as claimed by Applicant, and therefore, the properties of these components will necessarily be present because a component and its properties are inseparable. *In re Papesch*, 137 USPQ 43 (CCPA 1963).

19. Similarly, since Applicant discloses that ozone gas present in the microbubbles is released into surrounding tissues of the fish-paste product and that this ozone gas is rapidly converted by autolysis into oxygen and in this process, the ozone gas transiently forms active oxygen species and free radical species (see instant specification, page 7, Paragraph 2), it would be reasonably expected that in the method of Hoashi in view of Garlick, following the pestling stimulation step when the coating shells are ruptured and the ozone gas is released into the foodstuff and the foodstuff is sterilized, this would be due to the dissolution of the ozone gas into the foodstuff and the conversion of the ozone gas to the claimed active oxygen and free-radical species. Furthermore, since Hoashi in view of Garlick teach the claimed method steps, one of ordinary skill in the art would reasonably expect that the stimulation would be given to a part of the ozone gas-containing microbubble and that the operation of giving stimulation to a part of the ozone gas-containing microbubbles does not rupture all of the ozone gas-containing microbubbles, absent a teaching to the contrary.

20. Regarding Claims 22 and 27, Hoashi in view of Garlick do not teach repeating the operation of giving stimulation to a part of the ozone gas-containing microbubbles after processing and packaging the fish-paste product, and where the stimulation comprises high frequency irradiation of raw materials of the fish-paste product.

21. Swart teaches a method for reducing a microbial burden on a food product that includes contacting a food product with an antimicrobial agent, such as ozone (Page 6, Paragraph 58), via spraying or immersion in the antimicrobial agent (and Page 17, Paragraph 176) and irradiating the food product (Page 1, Paragraph 2) using gamma and x-rays (Page 1, Paragraph 6), which are known forms of high-frequency radiation. Swart teaches that the method is appropriate for fish products of various forms, including processed meats, formed products, minced products, etc. (Page 2, Paragraph 23). Swart teaches that in certain embodiments, contacting the food with an antimicrobial agent and irradiating produce a synergistic reduction in the microbial burden on the food product (Page 2, Paragraph 12). Swart further teaches that at the present time, irradiation of food product is the only commercially viable technology sufficiently effective at destroying harmful microbes or insects on or in raw or ready to eat product (Page 1, Paragraph 4). The radiation from the high frequency waves would be expected to generate the stimulation as claimed by Applicant.

22. Swart teaches that when the treatment with the antimicrobial agent precedes irradiating, any of a variety of processing steps can be conducted between irradiating and treating with the antimicrobial agent, for example, after applying the antimicrobial agent the food product can be processed such as by grinding and in addition, the food product can be packaged before irradiating (Page 7, Paragraph 66). Therefore, since Swart teaches the claimed stimulation, it follows that this would result in the rupturing of the coating shells of the ozone gas-containing microbubbles contained in the raw materials of the fish-paste product, thereby sterilizing the fish-paste product by the

formation of active oxygen and free-radical species. Therefore, Swart teaches a method of spraying a food with an antimicrobial agent such as ozone followed by irradiating the food product with high frequency irradiation and also teaches that the food product can be processed via grinding after applying the antimicrobial agent or that the food product can be packaged before irradiation.

23. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing a fish-paste product, as taught by Hoashi in view of Garlick, to have comprised using high frequency irradiation as the stimulation on the raw materials of the fish paste and to have repeated said operation of giving stimulation to a part of the ozone gas-containing microbubbles after processing and packaging the fish-paste product, because Swart teaches that a synergistic effect exists when food products are first treated with an antimicrobial agent such as ozone followed by high frequency irradiation, which is the only commercially viable technology sufficiently effective at destroying harmful microbes in raw products and further teaches that such irradiation treatment can also occur following processing and packaging of the food product. One of ordinary skill in the art would have been motivated to combine the technologies of ozone and high frequency irradiation, as taught by Swart, and repeat the operation of giving stimulation to a part of the ozone gas-containing microbubbles after processing and packaging the fish paste product in order to effectively destroy harmful bacteria on packaged ready to eat products.

24. Furthermore, since Hoashi in view of Garlick and Swart teach the claimed method steps and provide motivation for the repeated stimulation and teach the claimed

type of stimulation, one of ordinary skill in the art would reasonably expect that such a process would be given to a part of the ozone gas-containing microbubbles, absent a teaching to the contrary.

25. Regarding Claim 29, Hoashi in view of Garlick and Swart are taken as cited above in the rejection of Claim 22 and teach that the stimulation comprises heating the raw materials of the fish paste product because Hoashi teaches the preparation of boiled fish paste and fried fish balls following the ozone treatment (see Hoachi, English abstract of JP 56-121462). Boiling and frying are methods of heating, and thus capable of stimulating raw materials.

26. Regarding Claim 31, Hoashi in view of Garlick and Swart are taken as cited above in the rejection of Claim 22 and are deemed to teach the pestling but do not specifically teach a time of pestling or a relative speed of a pestle to a mortar. It is noted that mortar and pestles are conventional modes of grinding components, and it is again submitted that the agitation/blending/mincing taught by Hoashi in view of Garlick and Swart provide an equivalent mechanism for carrying out the claimed invention. Furthermore, Hoashi in view of Garlick and Swart teach that the stimulation comprises blending, mincing and processing of the fish meat into a paste food in the presence of ozone inside the agitator with the blade (see Hoachi, English abstract of JP 56-121462). Therefore, it would have been within the skill of one of ordinary skill in the art to pestle or blend the ingredients of the fish paste for a suitable time and speed in order to provide for a fish paste product that has the desired texture and consistency, and in keeping with economical modes of food production.

27. Regarding Claim 32, Hoachi in view of Garlick and Swart are taken as cited above in the rejection of Claim 22 and are deemed to teach the claimed method and method steps of adding ozone-gas containing microbubbles generated in water to raw materials of the fish-paste product, the coating step to create coating shells of protein and lipid in the raw materials, thereby creating coating shells made of protein and lipid (see rejection of Claim 22 above) and further teach stimulation steps of grinding or pestling the raw materials and heating (see Hoachi in the rejection above) or of high frequency irradiation of the raw materials (see Swart in the rejection above), which would be reasonably expected to rupture the coating shells of a portion of the ozone gas-containing microbubbles in the raw materials to form active oxygen and free radical species, thereby sterilizing the raw materials, and a secondary stimulation step of high frequency irradiation after processing and packaging the fish paste product (see Swart in the rejection above), which would also be reasonably expected to rupture the coating shells of another portion of the ozone gas-containing microbubbles to form further active oxygen and free radical species, thereby sterilizing the fish-paste product (see rejection of Claim 22 above and the teachings of Hoachi, Garlick and Swart).

28. **Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and Swart et al. (U.S.P.A. 2002/0192340), and further in view of Yuan et al. (U.S. P.A. 2003/0224669).**

29. Hoashi in view of Garlick and Swart are relied upon as above in the rejection of Claim 22.

30. Hoashi in view of Garlick and Swart do not specifically teach wherein the stimulation comprises microwave irradiation of raw materials of the fish paste product.

31. Yuan teaches a method of sanitizing and improving the cooking efficiency of a foodstuff such as seafood using a combination of ozone and heat treatment (Paragraphs 4, 31 and 37), wherein the foodstuff is first contacted with an aqueous solution of ozone for a time sufficient to sanitize or disinfect the foodstuff and then subjecting the foodstuff to a cooking process, and this combined method provides a synergistic effect on the killing rates of microorganisms as well as a reduction of the level of microorganisms on and in such foodstuffs (Paragraphs 32 and 33). Yuan teaches that, like Garlick, the aqueous solution containing ozone may be produced by introducing a gaseous stream or mixture containing ozone into water or aqueous solution (Paragraph 40). Yuan teaches that the cooking process can include an oven or other controlled environment and can include grilling, boiling, frying, or microwave treatment (Paragraph 46). Yuan teaches that optionally the foodstuff may be packaged before or after the cooking process (Paragraph 31). Therefore, Yuan provides for performing the stimulation of the heating via methods taught also by Hoashi such as boiling or frying, or by using microwave treatment performed on the food product prior to as well as after packaging.

32. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the stimulation taught by Hoashi in view of Garlick

and Swart to have comprised microwave irradiation of the raw materials of the fish-paste product, because Yuan teaches that a combined treatment of aqueous ozone treatment and a cooking method such as grilling, boiling, frying or microwave treatment has been shown to have a synergistic effect on the reduction of microorganism presence on foodstuffs, therefore equating the various cooking methods. One of ordinary skill in the art would have been motivated by Yuan to either use the cooking methods disclosed in Hoashi or the microwave treatment taught by Yuan as the heat treatment to be performed followed by ozone treatment in order to ensure that the fish-paste product is effectively sterilized. Furthermore, Yuan also motivates the use of the stimulation of microwave irradiation following packaging, and therefore, one of ordinary skill in the art would have also been motivated by Yuan to perform such a heating treatment following packaging in order to ensure that the packaged product has been sufficiently treated to prevent any bacterial contamination.

Response to Arguments

33. The 112 1st and 2nd rejections set forth in the office action mailed on 8/23/2011 have been withdrawn in light of Applicant's cancellation of the claims and drafting of new claims.

34. Since the Examiner has relied on the references of Hoang, Garlick and Swart as previously applied, for the rejection of new Claims 22-32, Applicant's arguments have been carefully considered but are not persuasive for the following reasons.

35. Applicant's first point of argument is that the Garlick reference does not disclose ozone gas containing microbubbles This does not make sense to the Examiner without further explanation by Applicant because Garlick teaches that ozone gas is injected into a water stream with a venturi nozzle and specifically teaches that ozone dissolves in water, as is also known in the art. Garlick also teaches that the highly ozoneated water is used to create the inventive fog wherein the fog has a droplet size between 0.0005mm and 0.05 mm, where 0.05 mm is equivalent to 50 micrometers. Therefore, if the ozone is dissolved in the water and the water is made into a fog having droplets of 50 micrometers in average diameter, Garlick is seen to teach ozone gas-containing microbubbles. If Applicant disagrees with this contention, and states that Garlick does not teach such a limitation, then the question becomes: what happened to the ozone dissolved in the inventive fog taught by Garlick? Without further explanation of Applicant's position on the matter, the Examiner can not agree with Applicants assertion of Garlick not teaching the claimed ozone gas-containing microbubbles.

36. Furthermore, since Garlick teaches that smaller droplets of the ozone fog penetrate surface irregularities better than larger droplets (see Garlick, Column 3, lines 60-65 and Column 4, lines 1-5), and Applicant discloses the same action of the ozone microbubbles, it is submitted that the droplets of Garlick are behaving like the microbubbles of Applicant, therefore the ozone fog containing droplets of Garlick are interpreted as the ozone gas-containing microbubbles of Applicant.

37. Applicant's second point of argument relates to a lack of motivation to combine the prior art references to arrive at the claimed invention. The Examiner respectfully

disagrees with such a contention because, as previously stated, Hoang teaches a physical stimulation of ozone and the raw materials of the fish paste and a cooking step which is also a stimulation, and Garlick provides clear motivation for the ozone to have been delivered in the form of a fog/mist comprising ozone containing microbubbles having the claimed diameter, as Garlick teaches numerous benefits of using water containing ozone rather than ozone gas itself for a sterilizing medium. Therefore, since Hoang in view of Garlick teach the claimed method of ozone gas containing microbubbles in water having the claimed diameter mixed with the raw materials of the fish paste, one of ordinary skill in the art would have reasonably expected that the claimed coating step would occur due to the nature and action of the microbubbles disclosed by Garlick, where the smaller bubbles are able to access irregular surfaces of food products for increased penetration due to their small size (see disclosure of Garlick cited in the rejection of Claim 1 above).

38. This is also in light of the fact that Applicant discloses that such coating occurs due to the nature of the action of the ozone microbubbles by virtue of their small diameter. It is also noted that Applicant also does not specifically teach how such coating occurs, with the exception of stating that the action of the microbubbles due to their size allows such coating to occur. Similarly, since Hoang in view of Garlick, Swart and Yuan teach the claimed type of stimulation, such stimulation would be reasonably expected to rupture the coatings, thereby allowing the sterilizing process of the ozone to occur. It is also noted that both Swart and Yuan specifically disclose synergistic reactions when using ozone disinfection combined with either high frequency irradiation

or microwave irradiation, respectively, therefore providing clear motivation to add such stimulations to the method of Hoang in view of Garlick in order to boost the sterilizing effect of the method. Furthermore, Yuan equates cooking methods taught by Hoang such as boiling and frying with microwave irradiation as a secondary method of treating a food product that has been first treated with ozone, therefore rendering obvious the use of microwave cooking in place of the heating methods of Hoang.

39. Lastly, Applicant has not provided sufficient evidence and/or argument stating why the components taught by the references of record, which read on what is claimed by Applicant, would not behave in the manner as claimed by Applicant.

40. Therefore, the office action is made final and is deemed proper.

Conclusion

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

42. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNA A. WATTS whose telephone number is (571)270-7368. The examiner can normally be reached on Monday-Friday 9am-2pm.

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

45. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. Sayala/
Primary Examiner, Art Unit 1781

/J. A. W./
Examiner, Art Unit 1781
December 22, 2011